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## CLAIMS

What is claimed is:

1. An inspection system for automatically detecting and classifying manufacturing defects in decorative wood panels following assembly of a decorative wood laminate, having a decorative wood facing, to a core or blank, said decorative wood facing having desirable areas of natural wood shading and said system using a photographic image of said panel as the basis for detecting and classifying said defects, which system comprises:
  - creating a computer driven recipe utilizing detectors and classifiers specifically created from sample decorative wood panels comparable to said decorative wood panels to be inspected;
  - photographically scanning said decorative wood panels to be inspected following assembly and determining therefrom the occurrence of defects and a defect value based on the size and shape of the defect; and
  - assigning a grade of acceptability to such inspected panels based upon the defect value indicated.
2. A system as defined in Claim 1 which includes selectively diverting said panels into segregated receiving stations based on a common grade of acceptability.
3. A system as defined in Claim 1 which includes:
  - creating multiple sets of computer driven recipes corresponding to multiple decorative wood panel types; and
  - providing a controller for instructing the system as to which decorative wood panel type is to be processed and accordingly the recipes to be applied to that wood panel type.

4. A system as defined in Claim 3 which includes providing a work order form which identifies production criteria including a decorative wood panel type to be produced, such identification in the form of a bar code readable by the controller and transferable by the controller to the computer driven recipes for  
5 selection of the applicable recipe.

5. A system as defined in Claim 4 wherein the controller further comprises the capability of examining the detectors and classifiers of the various recipes, determining similarities of wood type defects of such various recipes as compared to a decorative wood panel type for which a recipe is not created, and  
10 selecting desired ones of said detectors and classifiers for custom creating a new recipe for said decorative wood type.

6. A system for detecting and classifying defects in decorative wood panels having decorative wood shading following assembly of decorative wood laminates to cores in the production of the panels, said system comprising:  
15 creating recipes having value identifiers or parameters using photographic images of sample decorative wood panels exhibiting different types of defects and different degrees of the defects within the different types of defects;  
assigning different grade levels to the different value identifiers for determining acceptability of the panels as assembled and specifically determining as  
20 acceptable the natural wood shading of said panels;  
photographically scanning decorative wood panels following assembly thereof and thereby generating photographic images of the panels;  
identifying defects and values of said defects determined by said recipes to first determine a type of defect and, second, to determine a degree of that defect;  
25 classifying the panels as assembled into said grades of acceptability; and  
providing for separation of the assembled panels by grade of acceptability.

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7. A system as defined in claim 6 wherein each defect is assigned a grade level having multiple levels of acceptability from best to poorest, and said system further including a step whereby assembled panels having multiple defects are assigned different grade levels and a final grade as determined by the defect receiving the poorest grade level.

8. A system as defined in claim 6 wherein each panel includes decorative wood laminates at opposed sides of said panels, and both sides being photographically scanned and thereby producing dual images for each panel, said assignment of grade levels applicable to the two sides independently.

9. A system as defined in claim 7 having multiple recipes for multiple types of decorative wood panels, and including a controller receiving instructions as to processing of different types of decorative wood panels and said controller instructing the system as to the recipe to be utilized.

10. A method for creating a grading system for decorative wood panels having decorative wood shading which comprises:

selecting samples of decorative wood panels having different types of defects as generated in an assembly process for assembling decorative wood veneer or laminate to cores, said selecting of samples further including different degrees of each defect;

categorizing the sample selection by wood type, defect type, and defect degree;

assigning parameters to identify defect degrees to enable by said parameters the determination of acceptability grade for each panel at least as among the grades acceptable and non-acceptable and specifically determining the natural wood shading to be acceptable;

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converting the defect type information to a recipe of detectors and classifiers readable by a programmable computer and downloading the recipes into the computer for processing;

5 providing a scanner connected to the programmable controller and a controller to receive decorative panel orders and conveying such orders to the programmable computer to function as a grading system whereby assembled decorative wood panels are scanned for defects and graded in accordance with the parameters.

11. A method as defined by claim 10 wherein the selection of samples is  
10 repeated for different designated wood species of decorative wood panels, and producing different sets of recipes for said different species of decorative wood panels, said controller upon reading a customer order identifying the wood species to the computer program for selection of a designated recipe for that wood specie.

12. A method as defined by claim 11 wherein the controller and  
15 programmable computer in combination are responsive to identification of comparable features of a non-designated wood specie to enable scanning and grading by selective ones of the detectors and classifiers of said recipes.